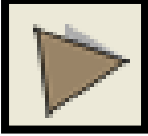


## Demonstrate Rotation and Symmetry of 2D shapes

**TAKS obj. #3.** The student will demonstrate an understanding of geometry and special reasoning.

**(5.8A)** sketch the results of translations, rotations, and reflections **4.9B, 4.9C, 3.9C**

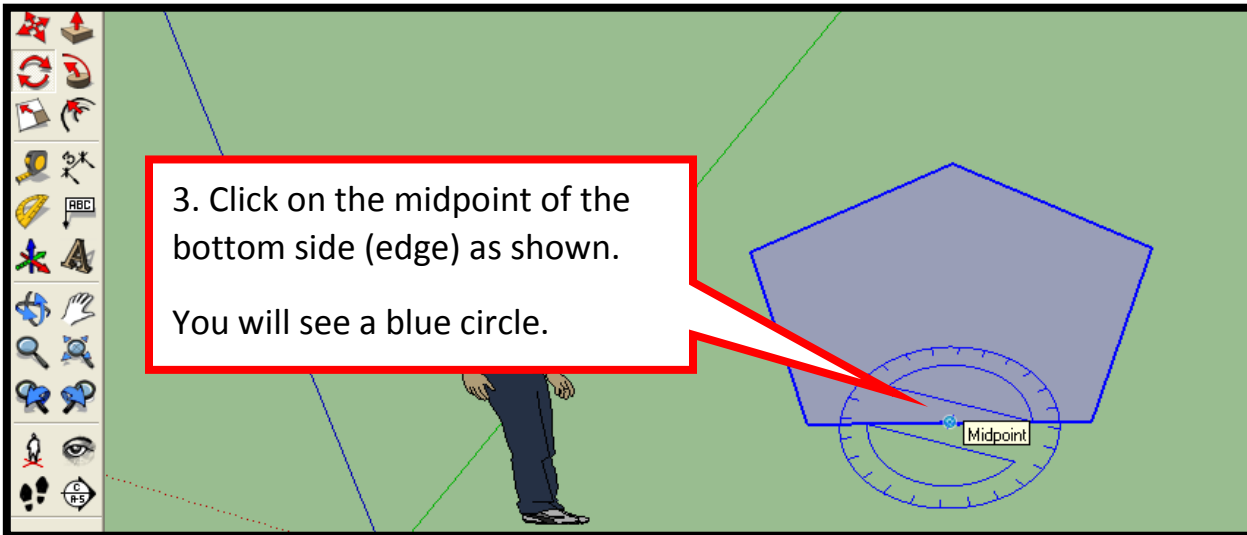


1. Click on the polygon drawing tool to draw a shape. The default shape is a hexagon with 6 sides so this is what it will always draw unless you change it.

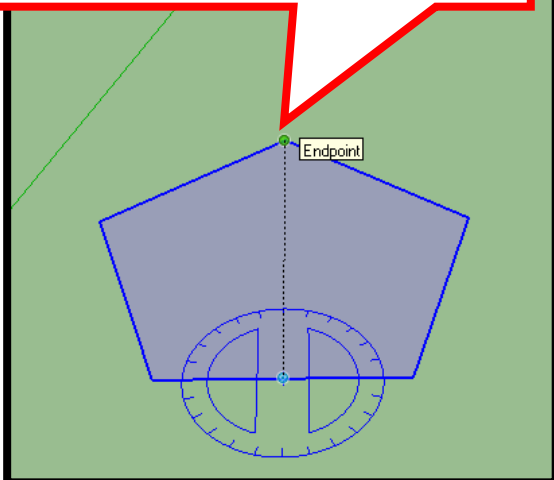
**Tip:** You change the number of sides by clicking on the Polygon tool- then press the number of sides you want with an S after it and press **Enter**. So if you want 8 sides- press **8s** and it will draw an octagon.



2. Once you have your shape drawn, click on the rotate tool in the top or side menu bar. When you put your cursor on the screen you will see a protractor now as shown below.

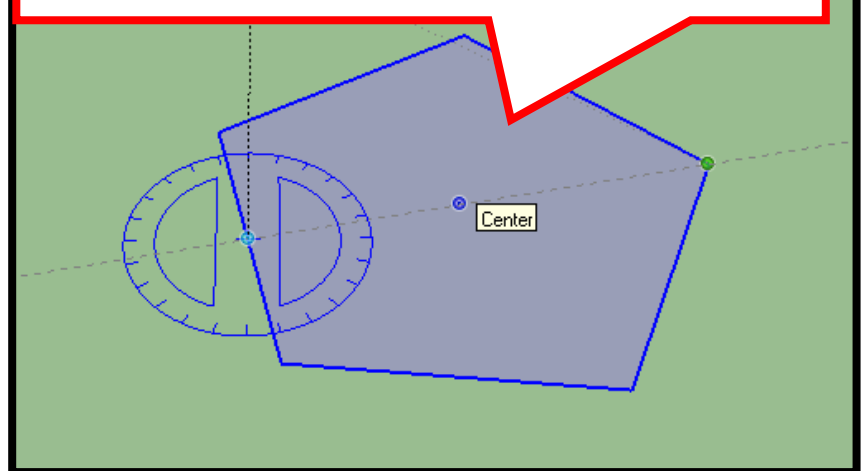


4. Now click on the end point at the very top.

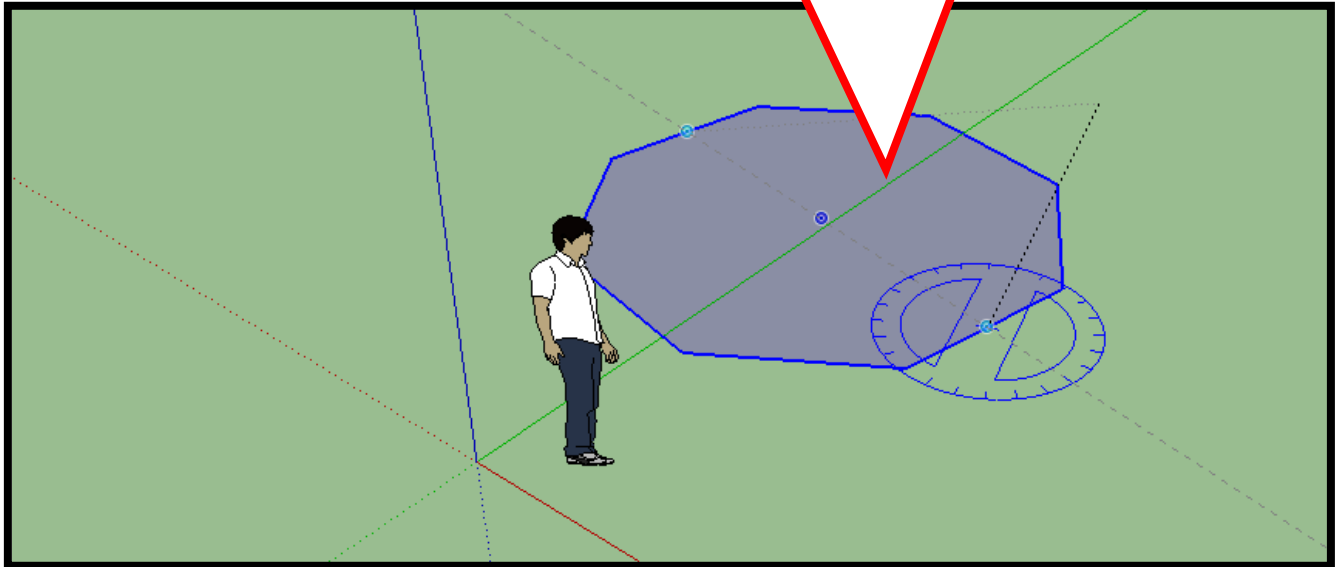


5. Now move your move right to left and see the object rotate.

*If you will notice- it brings the dotted center of the line with it. Here you can see the line of symmetry.*



As you rotate it and it crosses one of the green axis lines- you may notice it now shows a both vertical and horizontal line of symmetry as shown below.



**Handy Tip:** Press the space bar to get out of the rotation tool to draw more objects.

**Now you try:**

**Draw the following 2 dimensional shapes one at a time.**

Then use the rotate protractor tool to rotate them around on your screen to see if you can find both vertical (dotted line) and horizontal (green line) lines of symmetry

Shape	Vertical line of symmetry?	Horizontal line of symmetry?
Triangle		
Pentagon		
Hexagon		

Octagon		
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1. Making Rotated Copies With the Rotate Tool
2. Step 1

Left-click the Rotate Tool on the toolbar. The cursor will turn into a circular protractor.

3. Step 2

Left-click the object you want to rotate.

4. Step 3

Press "Ctrl" on your keyboard. The cursor is now the circular protractor with a plus sign indicating that you want to duplicated the selected object.

5. Step 4

Left-click to set the starting point of your desired rotation.

6. Step 5

Move the cursor using your mouse until you reach the rotation ending point you want. A copy of the object now appears displaying the desired rotation.

7. Step 6

Left-click to complete the rotation.

#### Tips & Warnings

- Press "Esc" to restart your rotation if you make a starting point mistake.
- Left-click "Edit" and select "Undo Rotation" to undo the rotation.
- Type a multiplier such as x2, x3 or x4 to create multiple copies.